

PROCEEDINGS
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NEW *STENODYNERUS* FROM NORTH AMERICA
(HYMENOPTERA; EUMENIDAE)

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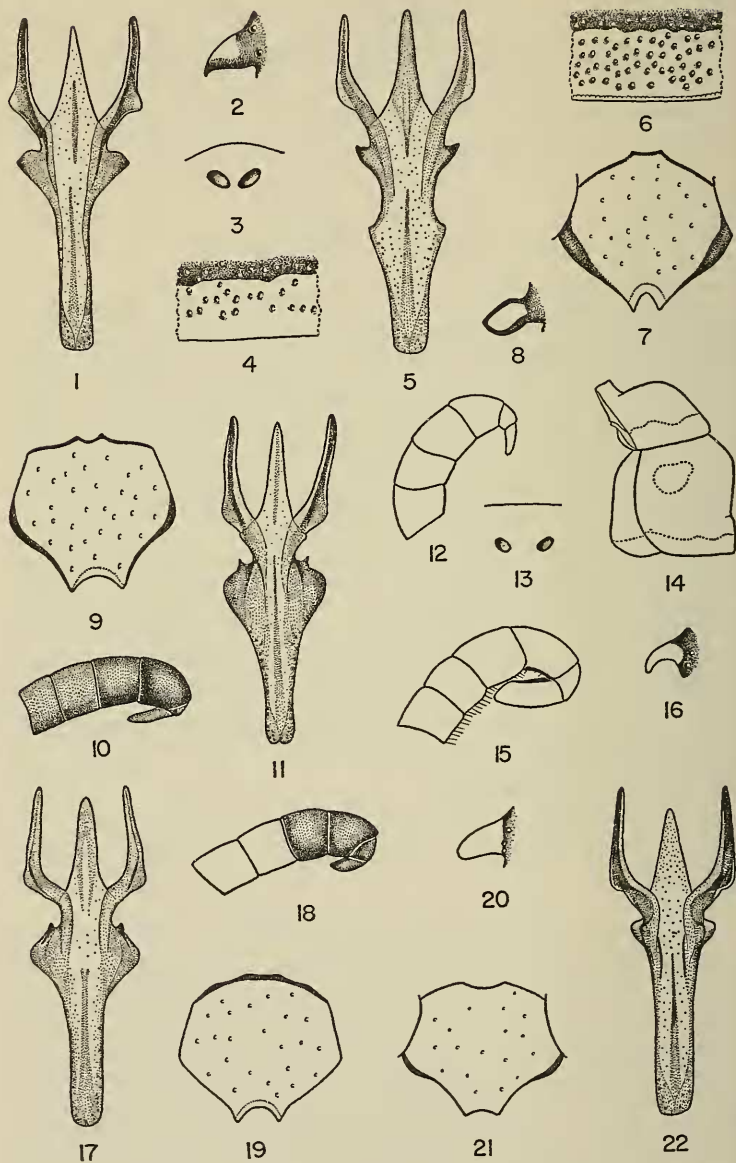
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Several infrequently seen new species of *Stenodynerus* have accumulated during many years of study on North American Eumenidae. Biological studies now under way provide an additional impetus for naming the new forms at this time. Type material will be deposited in the following cooperating institutions as indicated in the distribution records: American Museum of Natural History (AMNH); California Academy of Sciences (CAS); Cornell University (Cornell U.); Los Angeles County Museum (LACM); Harvard Museum of Comparative Zoology (MCZ); Nevada State Department of Agriculture (NSDA); Oregon State University (OSU); University of Arizona (U. Ariz.); University of California at Berkeley (CIS), at Davis (UCD), at Riverside (UCR); University of Colorado (U. Colo.); University of Kansas (KU); U. S. National Museum (USNM); Utah State University (USU); Washington State University (WSU).

Illustrations were made by Mrs. Ellen Parker based on camera lucida sketches. Aedeagus figures are from flattened mounts.

Stenodynerus canus canus Bohart, new species and subspecies

Male holotype: Length 8 mm. Black, marked with whitish as follows: clypeus, mandible mostly, scape in front, lower orbit, frontal spot, postocular dot, two anterior spots on pronotum, tegula, spot beneath, parategula, postscutellar band, posterior margins of tergites I-VI and sternites II-III, free spots on tergites I-II, leg extensively including tarsi toward base. Antennal hook brownish, wings lightly brown-stained. Pubescence minute, inconspicuous. Punctuation moderate to fine, clypeus with small and slightly striatiform punctures, those on summit of tergite I fine, near apex of II well separated (Fig. 4). Shape of clypeus, prehumeral pits and parategula as in Figs. 2, 3, 9; flagellum shape about



as in *coniodes*, described below (Fig. 18), but gradually redder within toward apex; no interocellar tubercles; no propodeal shelf behind post-scutellum; mid femur not depressed basoventrally; tergite II thickened at apex about 0.5 ocellus diameter; sternite II with a basomedian crease; profile of tergite II low and smoothly curved; genitalia as in Fig. 1.

Female: Length about 9.5 mm. Scape often all dark; clypeus with two spots at top, a crescent or all dark; postscutellar band often broken; legs sometimes mostly dark; sternite III dark, tergites III-VI sometimes all dark; tarsi dark. Clypeus unusually long; vertex pit fairly large, shallow and punctate.

Holotype: Male (UCD), Bear Pass Creek, Butte Co., Idaho, 21 July 1947 (R. M. Bohart).

Paratypes: 19 males, 41 females, May to August, IDAHO: Harpster Grade, Idaho Co. (W. F. Barr, U. Idaho); Moscow Mt. (UCD); Webb (W. F. Barr, U. Idaho); Murphy Hot Springs, Owyhee Co. (T. O'Connell, U. Idaho); WASHINGTON: Ewan (R. C. Shannon, USNM); Wawawai (L. Turner, WSU); Asotin (V. Argo, USNM); near Ellensburg (E. I. Schlinger, UCR); BRITISH COLUMBIA: near Armstrong (J. Wynne, UCD); OREGON: Rufus (R. M. Bohart, UCD); Lick Creek Ranger Station, Wallowa National Forest (Bolinger-Jewett, OSU, UCD, CAS); Austin (H. A. Scullen, OSU); Steens Mts. (Bolinger-Jewett, OSU); NEVADA: near Carlin (R. H. Beamer *et al.*, KU); UTAH: Logan (R. M. and G. E. Bohart, UCD); Mill Creek Canyon, Salt Lake Co. (J. L. Eastin, USU); Echo (J. L. Eastin, UCD); Wellsville Mts. (R. M. Bohart, UCD); Ogden (AMNH); Webb (W. F. Barr, U. Idaho); WYOMING: Yellowstone National Park (A. and H. Dietrich, Cornell U.); Lander (G. E. Bohart, UCD); MONTANA: Beaver Creek (S. J. Hunter, AMNH); COLORADO: Florissant (S. A. Rohwer, USNM, CAS, UCD); Cripple Creek (S. A. Rohwer, USNM); near Cedaridge (R. Bauer, UCD); Electra Lake (AMNH); Aspen (Cornell U., AMNH); near Boulder (U. N. Lanham, U. Colo.; G. Alexander, UCD).

Systematics: There is apparently a relationship to *lucidus* Rohwer which has similar male genitalia and general structure. In *lucidus*, however, the punctation is much finer and the ocular emargination is

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FIGS. 1-4, *S. canus*; 1, aedeagus; 2, parategula; 3, prehumeral pits; 4, punctation near apex of tergite II. FIGS. 5-8, *S. hybogaster*; 5, aedeagus; 6, punctation near apex of tergite II; 7, male clypeus; 8, parategula. FIG. 9, *S. canus*, male clypeus. FIGS. 10-11, *S. opalinus*; 10, terminal flagellomeres of male; 11, aedeagus. FIGS. 12-14, *S. hybogaster*; 12, terminal flagellomeres of male; 13, prehumeral pits; 14, profile of abdominal segments I and II. FIGS. 15-16, *S. innobilis*; 15, terminal flagellomeres of male; 16, parategula. FIGS. 17-20, *S. coniodes*; 17, aedeagus; 18, terminal flagellomeres of male; 19, male clypeus; 20, parategula. FIGS. 21-22, *S. innobilis*; 21, male clypeus; 22, aedeagus.

dark in both sexes. *S. canus* is superficially like *kennicottianus* Sausure, which differs in having large punctures at the summit of tergite I. The markings of *canus* specimens from the Pacific Northwest are much more reduced, especially in the female, than those from Colorado and Nevada.

***Stenodynerus canus helvolus* Bohart, new subspecies**

Male holotype: Length 8 mm. Markings sulfur yellow, arranged as described for typical *canus* except: two scutellar spots, lateral propodeal spot, spots of tergite I attached, free spots on sternite II, bands on sternites IV-V.

Female: Length about 9.5 mm. Clypeus usually all yellow except for a narrow peripheral black rim but sometimes with a median black mark, scutum usually dotted, tergites III to V and sternites IV-V usually banded, free spots sometimes on sternite II.

Holotype: Male (UCD), Boca, Nevada Co., California, 19 June 1962 (R. M. Bohart).

Paratypes: 25 males, 16 females, June and July all from CALIFORNIA: Boca (R. M. Bohart *et al.*, UCD, USNM, CIS, UCR, KU, AMNH, LACM); Truckee (E. P. VanDuzee, CAS, UCD); Gold Lake, Sierra Co. (C. L. Fox, CAS); Sagehen Creek, Nevada Co. (M. E. Irwin, UCD). I have seen Californian specimens also from Quincy, Plumas Co.; Bridge Creek Camp, Norvell, Susan River Camp, Summit Camp, Lassen Co.; Hat Creek and Old Station, Shasta Co.; Hebron Summit, Siskiyou Co.; Cedar Pass and Davis Creek, Modoc Co.; and White Mts., 10,000 feet, Mono Co. Out-of-State localities are 16 mi. NW Flagstaff, Arizona; Reno, Nevada; and Klamath Lake, Oregon.

Systematics: In addition to the yellow color, *helvolus* has the markings generally more extensive than in typical *canus*. In *helvolus* there is a parallel similarity to *kennicottianus antheus* Cameron, with which it may be collected. Here, also, the fine punctation across the summit of tergite I in *helvolus* is distinguishing.

***Stenodynerus hybogaster* Bohart, new species**

Male holotype: Length 8.5 mm. Black and yellow with red and yellow legs. Yellow are: clypeus except for narrow black margin, scape in front, lower orbit, frontal spot, narrow postocular spot, two barely separated pronotal triangles, tegula partly, spot beneath, parategula, postscutellum mostly, legs partly, distal margins of tergites I to V and sternite II, free spot on tergite II. Red are: inner side of flagellum including tip, tegula partly, legs mostly, including tarsi and hind femur entirely. Forewing brown-stained. Pubescence minute, pale, inconspicuous. Punctation moderate, fine on clypeus, coarse toward summit of tergite I with some punctures as large as ocelli, moderate but close before apex of II (Fig. 6). Shape of clypeus, tip of antenna, prehumeral pits and parategula as in Figs. 7, 8, 12, 13; ocellar area with a pair of narrow and smooth tubercles,

not bridged above front ocellus; humeral corners somewhat upturned; propodeum rough above with indistinct pit-like punctures along lateral angle, hind face with small to large shallow punctures arranged semicircularly, no shelf behind postscutellum; tergite I short and broad; tergite II with a hump at basal one-third, a transverse crease at distal one-third in profile, distal reflex less than 1.0 ocellus diameter (Fig. 14); sternite II with a basomedian crease; basal extension of paramere with sharp basal projection; aedeagus with pointed submedian expansion which is broader than the sharp median expansion (Fig. 5).

Female: Length about 10 mm. Clypeus with a yellow mark across top, orbit with a dot only, propodeal angles yellow. Vertex pit somewhat larger than an ocellus, delimited in front by coarse punctures.

Holotype: Male (MCZ), Riley Co., Kansas, 25 September on *Polygonum* (J. B. Norton).

Paratypes: 4 males, 11 females, April to August, MISSISSIPPI: Oxford (MCZ); MISSOURI: St. Louis (P. Rau, USNM); KANSAS: Gove Co. (F. X. Williams, UCD); Pottawatomie Co. (H. E. Evans *et al.*, MCZ); NEBRASKA: Rulo (UCD); Child's Point (UCD); TEXAS: Davis Mts. (R. H. Beamer, KU); COLORADO: Crowley Co. (UCD); NEW MEXICO: Las Cruces and Mesilla (T. D. Cockerell, USNM, CAS, UCD).

Systematics: This species is related to *kennicottianus* Saussure which has the summit of tergite I rough, also. The humped second tergite and broad parategulae distinguish *hybogaster* from related species, however (Figs. 8, 14).

Stenodynerus innobilis Bohart, new species

Male holotype: Length 7.5 mm. Black with whitish yellow as follows: mandible basally, clypeus, Y-shaped spot above, scape in front, lower orbit broadly, rhomboid humeral spots, tegula, spot beneath, parategula, scutal dot, postscutellar band; legs mostly; distal bands on tergites I–VI, broadly interrupted on III, attached spots on I, free pair on II; distal bands on sternites II–III; antenna light reddish within on flagellomeres I–VIII; wings lightly stained. Pubescence moderate, fulvous on frons where it attains 3 ocellus diameters, silvery elsewhere and not conspicuous except on ventral surface of flagellum (Fig. 15), especially on V to VIII. Punctuation weak on clypeus which is mostly polished, moderate elsewhere, a trifle larger at summit of tergite I than subapically, well separated subapically on II (about as in *canus*, Fig. 4). Shape of clypeus, tip of antenna, parategula as in Figs. 15, 16, 21; prehumeral pits about as in *hybogaster*, Fig. 13; interocellar area a raised platform which overhangs each ocellus; humeral carina a little raised; propodeum shelfless behind postscutellum; mid femur a little depressed basoventrally; tergite II evenly convex in profile, sternite II with a basomedian crease; genitalia as in Fig. 22.

Female: Length about 8.5 mm. Clypeus with a pale inverted U above, two small subapical spots, sometimes joined; tegula partly orange;

propodeum whitish yellow laterally; flagellum narrowly reddish within, not setose.

Holotype: Male (UCD), Hellhole Canyon, Borrego Valley, San Diego Co., California, 25 March 1959 (A. A. Grigarick).

Paratypes: 4 males, 14 females, March to June and October, all from California: San Diego Co.: Borego (R. M. Bohart, UCD), Culp Canyon (E. I. Schlinger *et al.*, UCR, UCD, CAS, USNM), Sentenac Canyon (UCD); Imperial Co.: 6 mi. W Coyote Wells (R. R. Snelling, LACM); Riverside Co.: Deep Canyon (M. E. Irwin, E. I. Schlinger, UCR, UCD), Tahquitz Canyon (F. Parker, L. Stange, UCD); Andreas Canyon (J. C. Hall, UCD); Palms to Pines Highway (C. D. Michener, KU), Palm Springs Station (J. W. MacSwain, CIS).

Systematics: A Great Basin species, *superpendentis* Bohart, is closely related and shares with *innobilis* the overhanging interocellar tubercles, the incurved parategula, and the setose male flagellum. *S. innobilis* differs by its yellowish white rather than white markings, by the absence of a preapical channel across tergite II, and by the large but not hatchet-shaped flagellar hook in the male (Fig. 15).

STENODYNERUS PULVIVESTIS GROUP

Of the four species in the *pulvivistis* group only *pulvivistis* Bohart is customarily without orange-red markings on the first tergite. The characters shared by all four species are as follows: length about 7 mm in male and 9 mm in female; ivory are: mandible basally, clypeus entirely in male and basal inverted U in female, scapal stripe in male, V-shaped spot on lower frons, inner orbital spot, postocular spot, large anterior pronotal spots which are narrowly separated medially, scutal dot, parategula, tegula partly, spot beneath, postscutellum mostly, fore and mid femora distally, all tibiae externally, stripe on fore basitarsus in male, all basitarsi dark in female, apical band on tergite I narrowed sublaterally, apical bands on tergites II, IV–VI, sternite II, free spot on tergite II. Pubescence minute, silvery, bloom-like. Punctuation moderate to somewhat coarse, moderately fine across summit of tergite I, well separated toward apex of II (as in *canus*, Fig. 4). Clypeal tip narrow, semicircularly incised in male (Fig. 19), weakly incurved in female, interocellar area not tuberculate; prehumeral pits of pronotum small and close together (as in *canus*, Fig. 3); parategula ovoid, straight along inner margin (Fig. 20); mid femur not depressed basoventrally; posterior face of propodeum somewhat concave, partly shiny; tergite II with apical margin as thick as one-half ocellus diameter; sternite II evenly convex in profile, creased basomedially; submedian expansion of aedeagus with sharp, anteriorly directed teeth; vertex depression of female shallow and small, posteriorly limited by a fine, nearly right-angled carina.

The only previously described species in the group is *pulvivistis* Bohart (1949: 249, Fig. 6). Three new species are described here, *chisosensis*, *coniodes* and *opalinus*.

***Stenodynerus chisosensis* Bohart, new species**

Male holotype: Flagellum very dark, a little lighter within; orange-red are: tegular spot, propodeum, femora, tibiae partly, tarsi, basal abdominal segment mostly. Pubescence of sternites IV to VI fine, appressed, inconspicuous. Flagellar hook strongly dorsoventrally flattened in profile; propodeum without an obvious shelf behind postscutellum; aedeagus about as in Fig. 17; median expansion with minute, basomarginal, thorn-like teeth.

Female: About as in male but clypeus usually with non-ivory part reddish.

Holotype: Male (USNM), Chisos Mts., Brewster Co., Texas, 10 June 1908 (Mitchell and Cushman).

Paratypes: 5 males, 5 females, May to September, TEXAS: Chisos Mts. (Mitchell and Cushman, USNM, UCD); Devils River, Val Verde Co. (Bishopp and Pratt, USNM); Salt Flat, Hudspeth Co. (H. E. Evans, MCZ); Quemado (P. M. Marsh, UCD); Anhalt, Comal Co. (Cornell U.); Fort Davis (L. A. Stange, UCD).

Systematics: The combination of shelfless propodeum, flat antennal hook, unusually dark antenna, all-red hind basitarsus in the male, extensively red propodeum and tergite I in both sexes, and minute aedeagal teeth are diagnostic.

***Stenodynerus conoides* Bohart, new species**

Male holotype: Flagellum dark externally, reddish yellow within except for VIII to XI which are brown (Fig. 18); orange red are: coxae, trochanters, femora mostly, tibiae within, propodeum, abdominal segment I mostly; mid and hind basitarsi dark brown. Pubescence of sternites IV to VI thick, conspicuous, semi-erect. Flagellar hook (XI) moderately stout in profile (Fig. 18); clypeus and parategula as in Figs. 19, 20; propodeum without an obvious shelf behind postscutellum; genitalia as in Fig. 17, median expansion of aedeagus with a sharp marginal angle on either side.

Female: With red markings as in male but often extensively red on clypeus, prothorax and abdominal segments II and following; antenna extensively red within.

Holotype: Male (UCD), Panamint Springs, Inyo Co., California, 15 July 1953 (E. I. Schlinger).

Paratypes: 37 males, 28 females, May to September, CALIFORNIA: Panamint Springs (E. I. Schlinger, UCD, UCR, CAS, USNM); 3 mi. S Olancha (P. D. Hurd, CIS); Batchelder Springs, Inyo Co. (H. K. Court, UCD, KU, ANSP, AMNH, UCR); near Big Pine (A. D. Telford, P. M. Marsh, UCD); near Death Valley Junction, Inyo Co. (N. L. Rump, AMNH); Walker Lake (A. T. McClay, UCD); Kramer Junction, San Bernardino Co. (M. E. Irwin, UCD); Whitewater, Riverside Co. (J. W. MacSwain, CIS); Borrego Valley, San Diego Co. (B. J. Adelson and P. D. Hurd, CIS; F. X. Williams, CAS); NEVADA: near Nixon (F.

D. Parker, *et al.*, NSDA, Cornell U., UCD, CAS, USNM); Jean (G. E. Bohart, UCD); 6 mi. E Currant, Nye Co. (G. I. Stage, CIS); 20 mi. S Winnemucca (T. R. Haig, UCD); Pyramid Lake (A. S. Menke, UCD); Mt. Montgomery (R. M. Bohart, UCD); IDAHO: 10 mi. NE Kuna (W. F. Barr, U. Idaho); UTAH: Bellevue (UCD); Trout Creek (H. B. Stafford, USNM). Metatypes, 4 males, 5 females, NEW MEXICO: Bernalillo, Carrizozo, Las Cruces; TEXAS: Sierra Blanca, El Paso, Marathon, Fort Stockton.

Systematics: This extensively red-marked species shares with *chisosensis* the red legs and the dark mid and hind basitarsi in the male. Other features which distinguish it when used in concert are the red propodeum in both sexes, the light red inner surface of the female antennae and the bicolored condition in the male, the rather stout flagellar hook in the male, the shelfless propodeum, the unusually pubescent male sternites, and the distinctive aedeagus (Fig. 17), which is angled rather than toothed.

***Stenodynerus opalinus* Bohart, new species**

Male holotype: Flagellum dark externally, light red within but becoming gradually darker on VIII-X, hook (XI) yellowish orange; abdominal segment I orange red except for apical border; mid and hind basitarsi broadly ivory externally. Pubescence of sternites IV to VI fine, appressed, inconspicuous. Flagellar hook (XI) strongly flattened dorso-ventrally in profile (Fig. 10); propodeum without an obvious shelf behind postscutellum; genitalia as in Fig. 11, median expansion of aedeagus with minute, marginal, thorn-like teeth.

Female: About as in male but propodeum red and basitarsi dark brown; flagellum extensively light red within; clypeus black except for basal ivory spot.

Holotype: Male (UCD), Lone Pine Creek, Inyo Co., California, 6 June 1939, on *Eriogonum fasciculatum* (R. M. Bohart).

Paratypes: 35 males, 29 females, April to September, CALIFORNIA: near Lone Pine (R. M. Bohart, UCD, CAS, USNM); Batchelder Springs, Inyo Co. (H. K. Court, UCD); 6 mi. W Essex (R. H. Beamer *et al.*, KU, UCD); Windmill Station, San Bernardino Co. (H. E. Cott, UCD); 12 mi. SE Ivanpah (H. J. Adelson, CIS); Morongo Valley, Riverside Co. (P. H. Timberlake, UCR); Palm Springs (E. P. Van Dyke, CAS; R. H. Beamer *et al.*, KU, UCD); Palm Springs Station (J. W. MacSwain, CIS, UCD); Palm Desert (P. D. Hurd, CIS, CAS; W. F. Barr, U. Idaho); Desert Springs (J. C. Hall, UCD); Deep Canyon, Riverside Co. (E. I. Schlinger, UCR); Cathedral City (P. H. Timberlake, UCR); Soledad, Los Angeles Co. (E. I. Schlinger, UCD); Borego (F. X. Williams, UCR; P. D. Hurd, CIS); Fish Springs, Imperial Co. (E. P. VanDuzee, CAS); NEVADA: Crystal (G. E. Bohart, UCD); Nixon (F. D. Parker, R. M. Bohart, UCD, NSDA); ARIZONA: Maricopa Mts. (H. and M. Townes, UCD); Palm Canyon (G. Butler, D. Tuttle, U. Ariz.); Wellton (A. J.

Basinger, UCR); Organ Pipe National Monument (G. Butler, F. Werner, U. Ariz.); Tucson (G. Butler, U. Ariz.; V. Vesterby, UCD); 25 mi. E Mesa (H. A. Scullen, OSU); NEW MEXICO: Las Cruces (L. D. Beamer, KU).

Systematics: Distinguishing features taken in combination are the non-red femora and tibiae, the ivory striped mid and hind basitarsi in the male, the shelfless propodeum, the light red inner surface of the antenna which in the male ends in a somewhat yellowish and flattened hook, the dark propodeum in the male, and the minutely toothed aedeagus.

LITERATURE CITED

- BOHART, R. M. 1949. The genus *Stenodynerus* in southern Arizona. Proc. Entomol. Soc. Washington, 51: 237-259.